Claims:

1. A fuel cells system having fuel cells, which receive a supply of a gas and generate electric power, and supply the generated electric power to a load, said fuel cells system comprising:

a gas flow rate-relating quantity measurement unit configured to measure a gas flow rate-relating quantity, which relates to a flow rate of the gas supplied to said fuel cells; and

a control unit configured to specify a working point associated with an output electric current-output voltage characteristic of said fuel cells corresponding to the measured gas flow rate-relating quantity, and to regulate electric power to be taken out of said fuel cells, so as to cause said fuel cells to be activated at the specified working point.

2. A fuel cells system in accordance with claim 1, wherein said control unit specifies a point of highest energy conversion efficiency on the output electric current-output voltage characteristic as the specified working point.

3. A fuel cells system having fuel cells, which receive a supply of a gas and generate electric power, and a secondary battery, which accumulates electric power therein and outputs the accumulated electric power, said fuel cells system supplying at least one of the electric power generated by the fuel cells and the electric power output from the secondary battery to a load, said fuel cells system comprising:

a gas flow rate-relating quantity measurement unit configured to measure a gas flow rate-relating quantity, which relates to a flow rate of the gas supplied to said fuel cells; and

a control unit configured to specify a working point associated with an output electric

current-output voltage characteristic of said fuel cells corresponding to the measured gas flow rate-relating quantity, to determine a first amount of electric power to be taken out of said fuel cells, which is required to activate said fuel cells at the specified working point, to determine a second amount of electric power to be supplied to the load, and to regulate at least one of the electric power to be output from the secondary battery and the electric power to be accumulated in said secondary battery, based on the first and second determined amounts of electric power.

4. A fuel cells system in accordance with claim 3, further comprising:

a state of charge sensor configured to measure a state of charge of said secondary battery,

wherein said control unit regulates at least one of the electric power to be output from said secondary battery and the electric power to be accumulated in said secondary battery, based on the measured state of charge in addition to the first and second determined amounts of electric power.

5. A fuel cells system in accordance with claim 3, wherein said control unit specifies a point of highest energy conversion efficiency on the output electric current-output voltage characteristic as the specified working point.

6. A fuel cells system in accordance with claim 4, wherein said control unit specifies a point of highest energy conversion efficiency on the output electric current-output voltage characteristic as the specified working point.

7. A fuel cells system, comprising:

fuel cells configured to a supply of a gaseous fuel and an oxidizing gas and to generate electric power through an electrochemical reaction of the gaseous fuel and the oxidizing gas;

a flow sensor configured to measure a flow rate of at least one of the gaseous fuel and the oxidizing gas supplied to said fuel cells;

a secondary battery configured to accumulate electric power therein and to output the accumulated electric power;

a state of charge sensor configured to measure a state of charge of said secondary battery;

an inverter configured to receive a supply of electric power from at least one of said fuel cells and said secondary battery to drive a motor;

a converter configured to vary a voltage output from said fuel cells and apply the varied voltage in parallel to said secondary battery and said inverter; and

a control unit configured to specify a working point associated with an output electric current-output voltage characteristic of said fuel cells corresponding to the measured flow rate, to determine a first amount of electric power to be taken out of said fuel cells, which is required to activate said fuel cells at the specified working point, to determine a second amount of electric power to be supplied to said inverter based on external information, and to regulate the voltage output from said converter, based on the first and second determined amounts of electric power and the measured state of charge.

8. A method of controlling fuel cells that receive a supply of a gas and generate electric power, said method comprising the steps of:

(a) measuring a gas flow rate-relating quantity, which relates to a flow rate of the gas

supplied to said fuel cells;

(b) specifying a working point associated with an output electric current-output voltage characteristic of said fuel cells corresponding to the measured gas flow rate-relating quantity; and

(c) regulating electric power to be taken out of said fuel cells, so as to cause said fuel cells to be activated at the specified working point.

9. A method in accordance with claim 8, wherein said step (b) comprises the step of specifying a point of highest energy conversion efficiency on the output electric current-output voltage characteristic as the specified working point.

10. In a fuel cells system having fuel cells, which receive a supply of a gas and generate electric power, and a secondary battery, which accumulates electric power therein and outputs the accumulated electric power, and supplies at least one of the electric power generated by the fuel cells and the electric power output from the secondary battery to a load, a method of controlling the secondary battery, said method comprising the steps of:

(a) measuring a gas flow rate-relating quantity, which relates to a flow rate of the gas supplied to the fuel cells;

(b) specifying a working point associated with an output electric current-output voltage characteristic of the fuel cells corresponding to the measured gas flow rate-relating quantity;

(c) determining a first amount of electric power to be taken out of the fuel cells, which is required to activate the fuel cells at the specified working point, and determining a second amount of electric power to be supplied to the load; and

(d) regulating at least one of electric power to be output from the secondary battery and the electric power to be accumulated in the secondary battery, based on the first and second determined amounts of electric power.

11. A method in accordance with claim 10, said method further comprising the step of:

(e) measuring a state of charge of the secondary battery,

wherein said step (d) comprises the step of regulating at least one of the electric power to be output from the secondary battery and the electric power to be accumulated in the secondary battery, based on the observed state of charge in addition to the first and second determined amounts of electric power.

12. A method in accordance with claim 10, wherein said step (b) comprises the step of specifying a point of highest energy conversion efficiency on the output electric current-output voltage characteristic as the specified working point.

13. A method in accordance with claim 11, wherein said step (b) comprises the step of specifying a point of highest energy conversion efficiency on the output electric current-output voltage characteristic as the specified working point.

14. A fuel cells system having fuel cells, which receive a supply of a gas and generate electric power, and supply the generated electric power to a load, said fuel cells system comprising:

means for measuring a gas flow rate-relating quantity which relates to a flow rate of

the gas supplied to said fuel cells; and

means for specifying a working point associated with an output electric current-output voltage characteristic of said fuel cells corresponding to the measured gas flow rate-relating quantity, and for regulating electric power to be taken out of said fuel cells for causing said fuel cells to be activated at the specified working point.

15. A fuel cells system in accordance with claim 14, wherein said means for specifying specifies a point of highest energy conversion efficiency on the output electric current-output voltage characteristic as the specified working point.

16. A fuel cells system having fuel cells, which receive a supply of a gas and generate electric power, and a secondary battery, which accumulates electric power therein and outputs the accumulated electric power, said fuel cells system supplying at least one of the electric power generated by the fuel cells and the electric power output from the secondary battery to a load, said fuel cells system comprising:

means for measuring a gas flow rate-relating quantity which relates to a flow rate of the gas supplied to said fuel cells; and

means for specifying a working point associated with an output electric current-output voltage characteristic of said fuel cells corresponding to the measured gas flow rate-relating quantity, for determining a first amount of electric power to be taken out of said fuel cells, which is required to activate said fuel cells at the specified working point, for determining a second amount of electric power to be supplied to the load, and for regulating at least one of the electric power to be output from the secondary battery and the electric power to be accumulated in said secondary battery, based on the first and second determined

amounts of electric power.

17. A fuel cells system in accordance with claim 16, further comprising:

means for measuring a state of charge of said secondary battery,

wherein said means for specifying regulates at least one of the electric power to be output from said secondary battery and the electric power to be accumulated in said secondary battery, based on the measured state of charge in addition to the first and second determined amounts of electric power.

18. A fuel cells system in accordance with claim 16, wherein said means for specifying specifies a point of highest energy conversion efficiency on the output electric current-output voltage characteristic as the specified working point.

19. A fuel cells system in accordance with claim 17, wherein said means for specifying specifies a point of highest energy conversion efficiency on the output electric current-output voltage characteristic as the specified working point.

20. A fuel cells system, comprising:

fuel cell means for supplying a gaseous fuel and an oxidizing gas for generating electric power;

means for measuring a flow rate of at least one of the gaseous fuel and the oxidizing gas supplied to said fuel cell means;

battery means for accumulating electric power therein and for outputting the accumulated electric power;

means for measuring a state of charge of said battery means;

means for receiving a supply of electric power from at least one of said fuel cell means and said battery means to drive a motor;

means for varying a voltage output from said fuel cell means and for applying the varied voltage in parallel to said battery means and said means for receiving the supply of electric power; and

means for specifying a working point associated with an output electric current-output voltage characteristic of said fuel cell means corresponding to the measured flow rate, for determining a first amount of electric power to be taken out of said fuel cell means, which is required to activate said fuel cell means at the specified working point, for determining a second amount of electric power to be supplied to said means for receiving the supply of electric power based on external information, and for regulating the voltage output from said means for varying, based on the first and second determined amounts of electric power and the measured state of charge.